METRIC

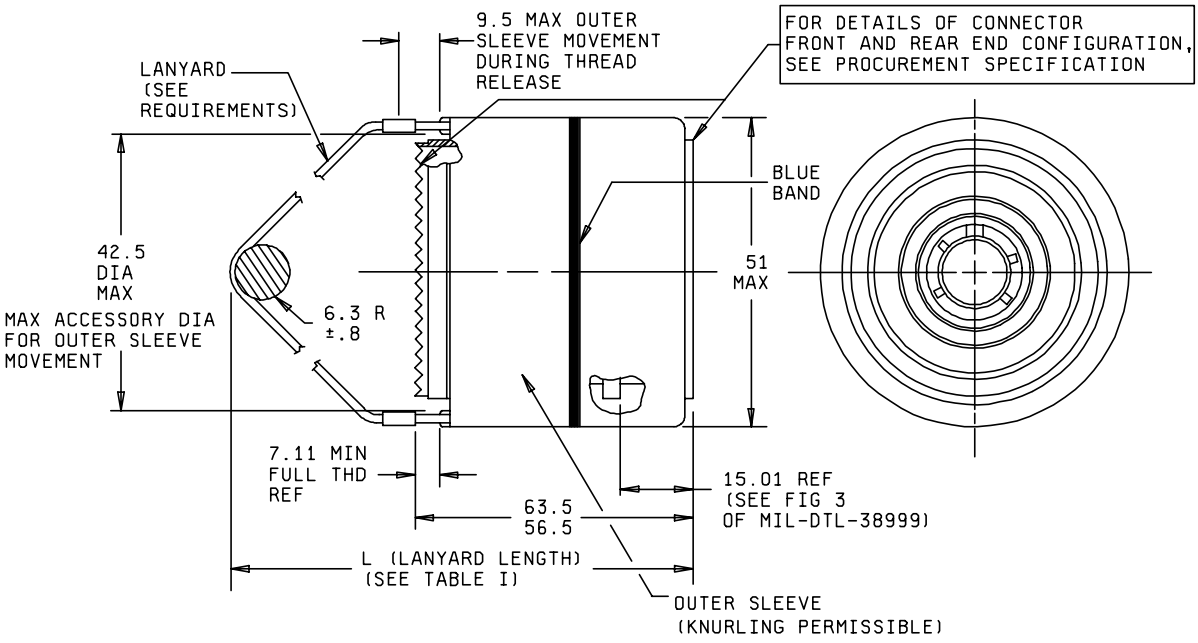
MIL-DTL-38999/31D
19 April 2002
SUPERSEDING
MIL-C-38999/31C
11 June 2001

DETAIL SPECIFICATION SHEET

CONNECTORS, ELECTRICAL, CIRCULAR, THREADED, PLUG, LANYARD RELEASE, FAIL-SAFE, REMOVABLE CRIMP CONTACTS, PINS, SHELL SIZE 25, SERIES III, METRIC

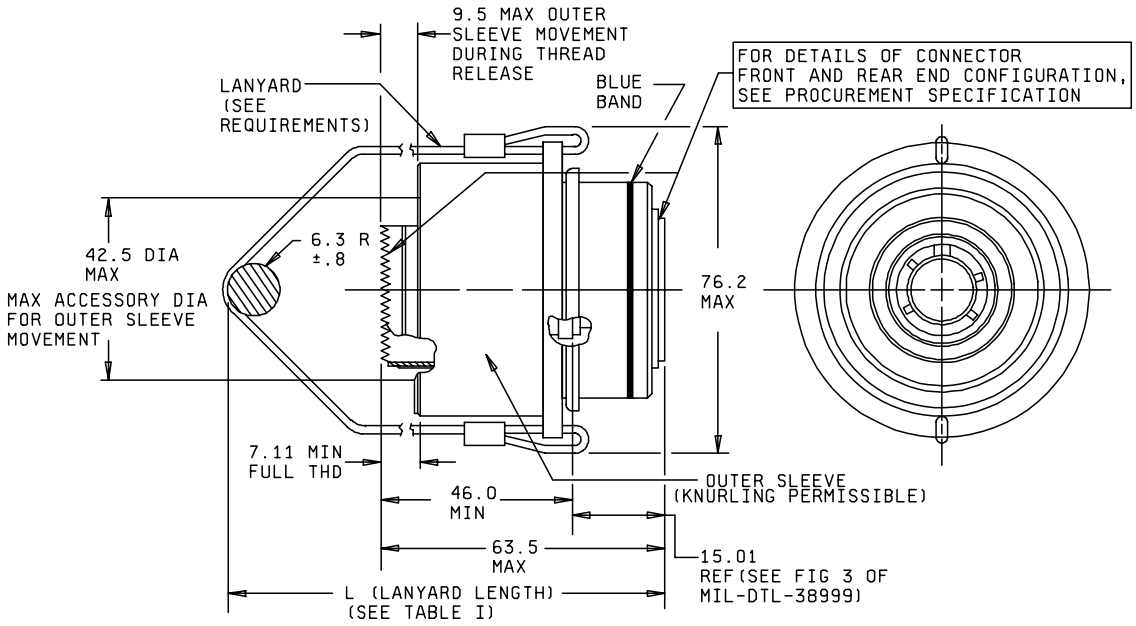
This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification and MIL-DTL-38999.



NOTES:
1. Dimensions are in millimeters.
2. Polarizing position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store, and issue this configuration.

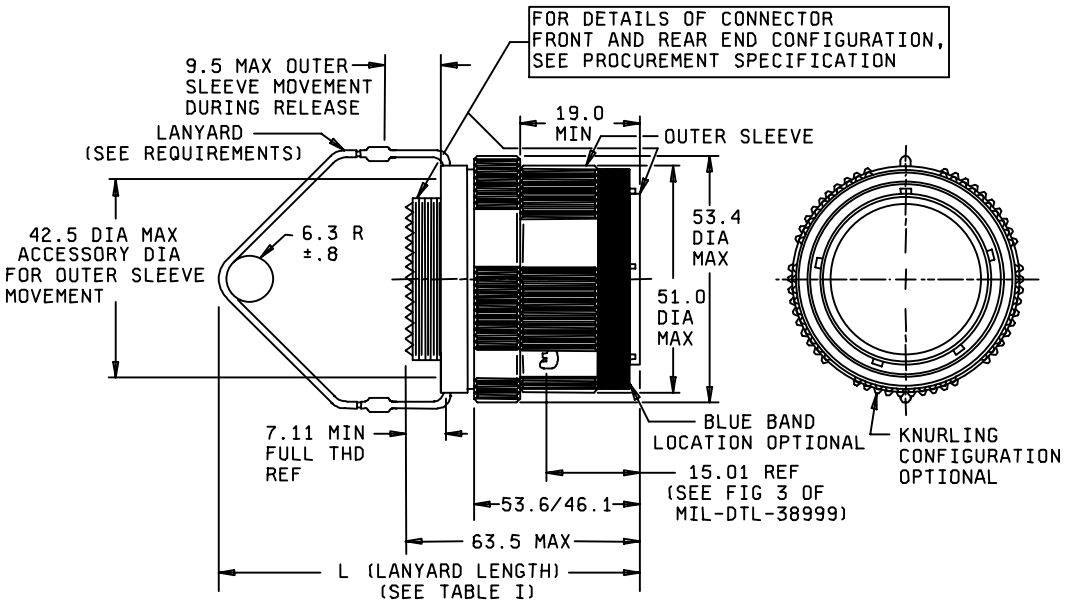
FIGURE 1. Plug, classes R, W and X, type 1.



NOTES:

1. Dimensions are in millimeters.
2. Polarizing position N is shown.
3. EMI grounding feature required on this connector.
4. Inactive for new design, the Government will not stock, store, and issue this configuration.
5. Only insert arrangements 25-11 and 25-20 of MIL-STD-1560 apply.

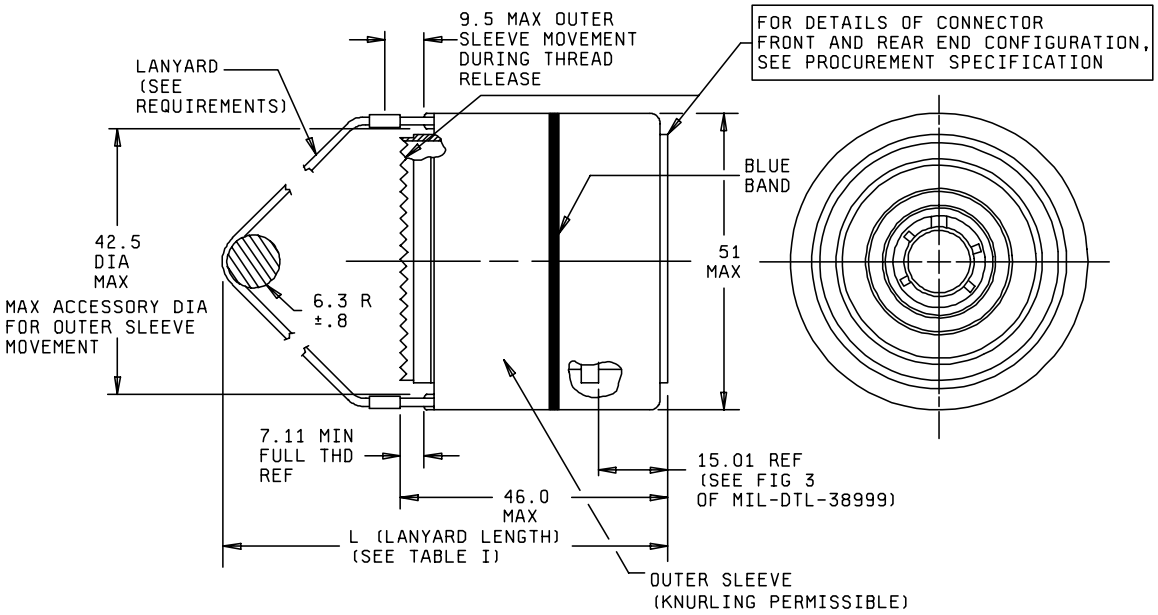
FIGURE 2. Plug, classes W and X, type 2.



NOTES:

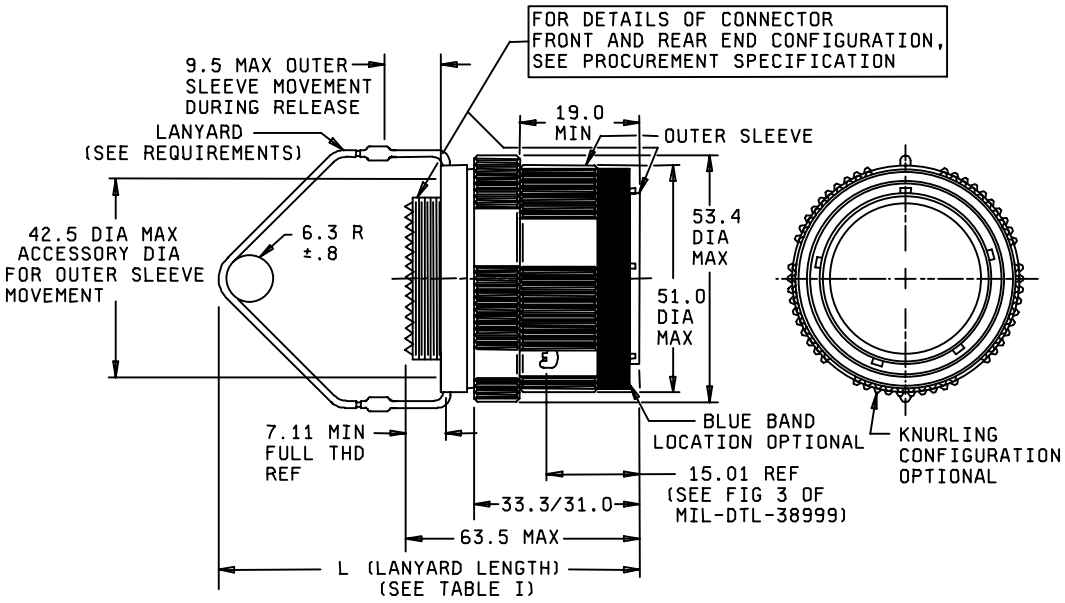
1. Dimensions are in millimeters.
2. Polarization position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store, and issue this configuration.

FIGURE 3. Plug, classes J and M, type 3.



NOTES:
1. Dimensions are in millimeters.
2. Polarizing position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store, and issue this configuration.

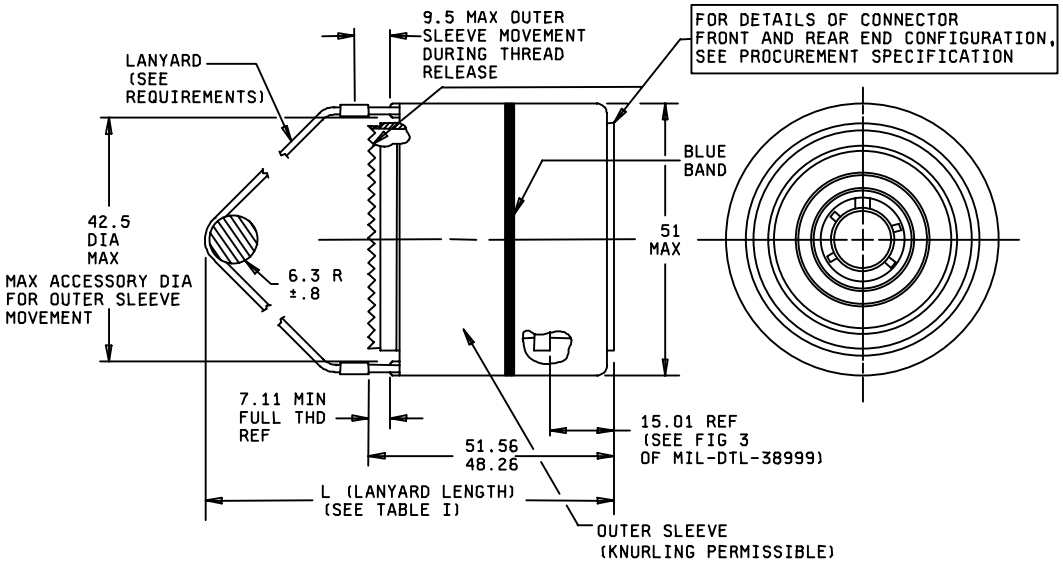
FIGURE 4. Plug, classes R, W and X, type 4.



NOTES:

1. Dimensions are in millimeters.
2. Polarization position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store, and issue this configuration.

FIGURE 5. Plug, classes J and M, type 5.



NOTES:

1. Dimensions are in millimeters.
2. Polarizing position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store, and issue this configuration.

FIGURE 6. Plug, classes R, W and X, type 6.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and table I.
Interface dimensions shall conform to MIL-DTL-38999.

TABLE I. Summary of connector types.

Types	Material	Shell Length Type	Shell Length	Coupling Ring Length Type	Coupling Ring Length Type
1	All metal	Long	63.5 / 56.5	Long	---
2	All metal	Long	63.5 max	Long	---
3	All Composite	Long	63.5 max	Medium	53.6 / 46.1
4	All metal	Short	46.0 max	Short	---
5	All Composite	Long	63.5 max	Short	33.3 / 31.0
6	All metal	Medium	51.56 / 48.26	Medium	---

This connector mates with MIL-DTL-38999/20 and /24.

Connector shall accept MIL-C-85049 self-locking accessories.

For insert arrangements: See MIL-STD-1560.

Lanyard:

a. 1.57 millimeter minimum diameter, seven strands of stainless steel capable of withstanding 890 Newtons pull test after assembly with connector.
b. Coupling design optional. Cable shall be covered with a suitable protective sleeving to preclude possible chaffing of wires.
c. Class J and M connectors, 2.54 millimeters nominal diameter, Kevlar cord capable of withstanding 840 Newton pull test after assembly with connector.

Connector shall disengage from any coupling condition including partially mated.

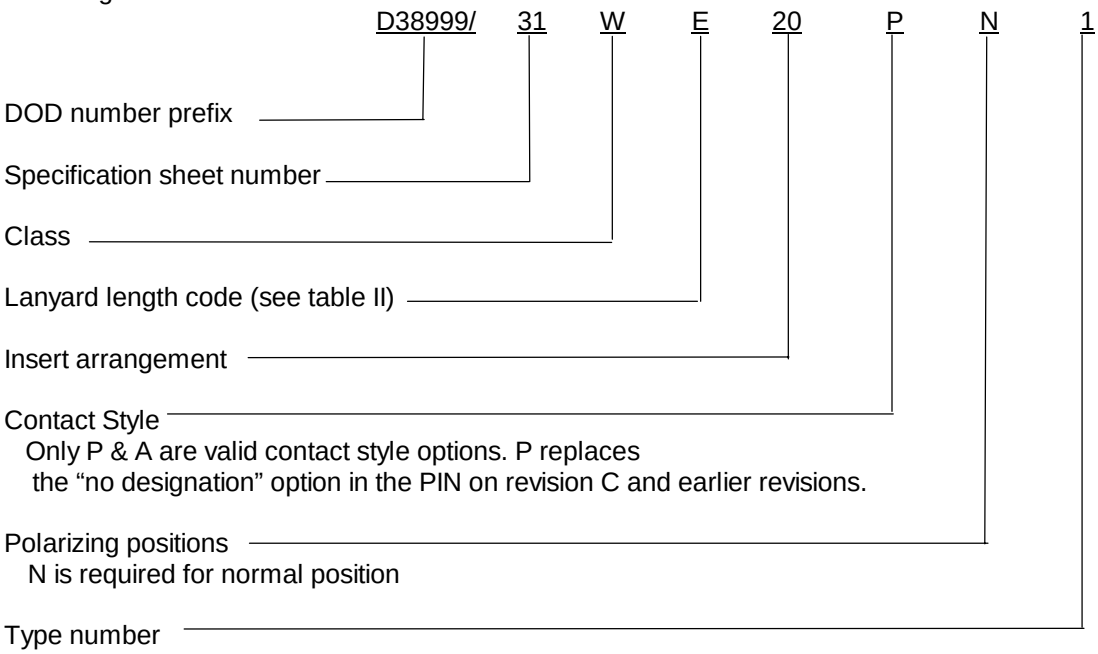
Connector design shall incorporate a swivel action for the lanyard to prevent twisting of the cable.

Spare contacts: The twin-axial and coaxial contacts are exempted from the spare contact requirements of MIL-DTL-38999.

The Government may stock, store, and issue types 1, 3, 4, 5 and 6 only (see figures 1, 3, 4, 5 and 6).

Part or Identifying Number (PIN) example:

For all figures:



NOTE: The term PIN is equivalent to the term (part number, identification number, and type designator), which was previously used in this specification.

TABLE II. Lanyard length codes.

Code	L ± 6
E	153
F	166
G	178
H	191
I	203
J	216
K	229
L	242

QUALIFICATION: Connectors shall meet the qualification requirements of MIL-DTL-38999 with the following exceptions and additions.

Qualification and group C periodic test table of MIL-DTL-38999, group 11, replace Coupling torque requirements with Pull-separation. Fail-safe disengagement shall follow Pull-separation test.

Durability: Wired connectors shall meet the durability requirements of MIL-DTL-38999, with the following exceptions:

The total number of cycles of mating and unmating shall be 500, in the following sequences:

200 cycles of normal mating and unmating, 50 cycles of normal mating with pull-separation unmating, 200 cycles of normal mating and unmating, 50 cycles of normal mating with pull-separation unmating. The lanyard release velocity during the pull-separation unmating cycles shall be 9.15 m/s ± 10%.

Pull-separation: In addition to mating and unmating by normal coupling ring rotation, the connector shall be capable of lanyard-pull-separation at any angle within 15° of the normal axis. Each connector shall have one straight pull and one pull at 15° from straight, with a pull rate not exceeding 13 cm/second. The test will be at -65°C (tolerance of +0°C, -5°C) at ambient, and at the maximum temperature of the specified class. The test will be conducted within 3 minutes after removal from the temperature chamber without forced heating or cooling. Maximum separation forces shall be 400 Newton for a straight pull and 445 Newton for a 15° pull.

Fail-safe disengagement: Connectors shall be partially mated with the plug coupling ring rotated approximately 50 percent of full coupling. Pull-separation shall be accomplished within the limits as specified above.

Vibration: Wired mated connectors shall meet the vibration requirements of MIL-DTL-38999 with the following exceptions:

a. Sine vibration: Connectors shall be subjected to the test specified in method 204, test condition G, of MIL-STD-202.

b. Random vibration: Connectors shall be subjected to the test specified in method 2005 of MIL-STD-1344, test condition VI, letter J, ambient temperature. Duration shall be 8 hours in the longitudinal direction and 8 hours in a perpendicular direction, for a total of 16 hours.

c. The QPL evaluating activity will define the accessory load and cable to be used in the random sine vibration tests.

Ice resistance: The mated, wired connectors with accessories attached shall be placed in a chamber and the temperature reduced and stabilized such that the item is maintained at -18°C (tolerance of +0°C, -5°C) for 1 hour. After stabilization of the chamber temperature, the test item shall be sprayed with water precooled to 2°C (tolerance of +5°C, -0°C), for a period of five (5) minutes. The test item shall be located a maximum of 305 mm (12 inches) from the spray nozzle. The entire test item shall be exposed to the spray. After completion of water spray, the test item shall remain in the chamber at -18°C (tolerance of +0°C, -5°C) for an additional 30 minutes. Upon completion of the 30 minute cold soak period, the test item shall be removed from the chamber and immediately (within two (2) minutes) subjected to uncoupling by use of the lanyard mechanism. The force required to separate the connector shall not exceed the 400 Newton straight pull and the 445 Newton 15° pull by more than 50 percent.

Dust (fine sand): Upon completion of the dust test, the test items shall be removed from the chamber and immediately subjected to uncoupling by use of the lanyard mechanism. The force required to separate the connectors shall not exceed the required values specified for pull-separation by more than 25 percent.

External bending moment: Wired connectors shall meet the external bending moment requirements of MIL-DTL-38999 with the following exceptions: size 25 shall be 28.3 Newton-meters.

Note: The pull-separation test is performed at a relatively low rate using conventional test equipment. Actual pull rates and pull-separation forces have been found to be much higher when this connector is used in flight.

CONCLUDING MATERIAL

Custodians:
Army – CR
Navy – AS
Air Force – 11
DLA – CC

Review activities:
Army – AR, MI
Navy – EC, MC, OS
Air Force – 19, 99

Preparing activity:
DLA – CC

(Project 5935–4546–01)